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### BIOL 366.01: Freshwater Ecology

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**BIOLOGY 366****FRESHWATER ECOLOGY****SPRING 2003****Instructor: Andrew Sheldon, HS 203A****Office Hours: T, Th 9:30-12:00, W 9:00-12:00****T.A. : Chris Funk**

**Introduction:** This course covers lakes and streams. It emphasizes the physical and chemical template against which diverse organisms play out their life histories and interact to influence community and ecosystem processes.

This schedule may have to be modified. There may be some slippage in lecture dates and field trips will be rescheduled if the weather is really awful or if the ice hasn't melted.

**!!!!\*!!! Note the two(2) scheduled Saturday (8 AM- 5 PM) field trips. One of these will run on two consecutive Saturdays. See lab schedule for when each lab section is scheduled to go. !!!!\*!!!**

**Text and Readings:**

1. 1. Kalff(K)—Limnology
2. 2. Merritt and Cummins (M&C)—Aquatic Insects of North America( 3<sup>rd</sup> Edition).
3. 3. Readings. Assignments from the attached list are given as “Readings # 5,8”. Note that both lecture and lab have reading assignments from the list.

**Grading:**

Midterm I	20%
Midterm II	20%
Final (Comprehensive)	30%
*Lab reports, problems , etc.	10%
* Writing component	10%
**Practical--Unknowns	10%

Note: Participation in field or lab may swing one(1) letter grade.

\*See below for writing component

\*\*The practical consists of of 5 unknowns (aquatic insects) to be identified to the genus level.

**Objectives:** Upon completing this course, you should:

- a. a. Understand the mechanics and chemistry of lakes and streams.
- b. b. Relate abiotic influences to biological and system responses and patterns.
- c. c. Apply (a) and (b) to environmental problems and management.
- d. d. Have practical experience with basic techniques (e.g. chemistry, sampling gear) for characterizing aquatic environments and presenting data.
- e. e. Recognize the orders and some families of aquatic insects. Effectively use taxonomic keys for aquatic insects. Beyond identification, you should have a general understanding of ecology, behavior and functional role of insects in aquatic habitats.
- f. f. Look beneath the surface for the rest of your life!

## LECTURE SCHEDULE AND READING ASSIGNMENTS

January	28	Intr. & Lake Origins	K . P. 24-34, Chap 6, Reading #1
	30	Lake Origins & Forms	K Ch. 4,5
February	4	Light	K Ch. 3,10, Reading #18,19,
	6	Heat	K Ch. 11(not 11.11)
	7	<b>Last Day to Add (DBS regulation).</b>	
	11	Heat & Movement	K Ch. 12
	13	Movement & Lake Monsters	
	18	Oxygen	K Ch. 15
	20	Ionic Composition	K Ch. 13
	25	Inorganic Carbon	K Ch. 14,27
	27	<b>Midterm I</b>	
March	4	Phosphorus & Nitrogen	K Ch. 16,17,18
	6	More P & N	K Ch. 8,9, Reading #11,12,13,17
	11	11 More P & N	
	13	Other Elements	K Ch. 19
	14	<b>Last Day to Drop</b>	
	18	Contaminants	K Ch. 28
	20	Phytoplankton	K Ch. 21
	25,27	<b>Spring Break</b>	
April	1	& Benthic Plants	K Ch. 24
	3	3 & Primary Production	
	8	Bacteria	K Ch. 22
	10	Zooplankton	K Ch. 23
	15	More zp's	
	17	<b>Midterm II</b>	
	22	Zoobenthos	K Ch. 25, Readings #20,14,15,16
	24	Experiments	K Ch. 20: 302-307.
	29	& Succession	Readings #21,22,23
May	1	& Ecosystems	
	6	& Synthesis	
	8	&.....	

**Final Exam Wednesday, May 14, 8:00-10:00**  
**NO EARLY FINALS WILL BE GIVEN**

## LAB SCHEDULE AND READING ASSIGNMENTS

January 30,31	Field trip&Lab	
February 6,7	Lake and stream morphology	K Ch. 7
February 13,14	<b>No Lab</b>	
February 20,21	Lake models	
February 27,28	Intr. Aquatic Insects	M&C. Ch.2,9
March 6,7	Ephemeroptera, Odonata	M&C Chap. 11,12 Readings 2,3,4
March 13,14	Plecoptera, Hemiptera	M&C. Ch. 14,15 Readings 5,6
March 20,21	Megaloptera, Lepidoptera & Trichoptera	M&C Ch. 16-19 Readings 7,8
April 3,4	Coleoptera, Diptera	M&C 20,22-26 Readings 9,10
<b>Saturday !</b> April 5	<b>Stream Field Trip—Both Sections</b>	
April 10,11	Process Stream Material	
April 17,18	Open Lab	
April 24,25	Chemistry, Instrumentation etc.	
<b>Saturday! April 26</b>	<b>Lake Field Trip—Friday group</b>	
May 1,2	Open Lab	
<b>Saturday May 3</b>	<b>Lake Field Trip—Friday group</b>	
May 5-9	Practical	

**Writing Component:** Freshwater Ecology, as a “mini-writing” course, partially satisfies the upper division writing requirement. We will critique and mark written exercises, return them, and evaluate rewritten submissions if required. The report on the stream field trip will be treated this way but the lake field trip comes too late in the term for the report to go through the full cycle. Three additional writing assignments will be based on the outside readings.

The following page, borrowed from the Graduate Record Exam, describes our expectations and standards for writing.

**Originality of Work:** Some of our field and laboratory projects will be done by teams of students so the resulting data are team or class property. Students are free to discuss results and interpretation. However, all written material, calculations and graphs to be handed in must be your own work.

#### **POLICY ISSUES**

The following boilerplate, to which I subscribe, is DBS policy.

**University policies on drops, adds or changes of grading option will be strictly enforced in this course. These policies are described on p. 19-20 of the 2002-2003 catalog. Students should specifically note that after the 30<sup>th</sup> day of the semester, such changes are NOT automatically approved. They may be requested by petition, but the petition MUST be accompanied by documentation of extenuating circumstances. Requests to drop a course or change the grade basis to benefit a student's grade point average will not be approved.**